



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/799,468	03/11/2004	Casey Prindiville	6047-68004-01	7702
24197	7590	11/21/2005	EXAMINER	
KLARQUIST SPARKMAN, LLP 121 SW SALMON STREET SUITE 1600 PORTLAND, OR 97204			CHAN, SING P	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 11/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/799,468	Applicant(s) PRINDIVILLE, CASEY	
	Examiner Sing P. Chan	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 21-31 and 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakumoto et al (U.S. 4,933,219) in view of Saito et al (U.S. 6,080,263), VanNortwick et al (U.S. 6,025,212), and Tsukagoshi (JP 11-123471).

Regarding claims 21, 25, and 26, Sakumoto et al discloses a method of applying an adhesive tape for die bonding. The method includes providing an adhesive tape with a release film, i.e. coverlay, peeling off the coverlay to expose the adhesive portion of the tape, punching the tape into a definite length, applying the punched portion at a temperature from 80°C to 120°C, Then applying an IC chip onto the adhesive portion and heating the assembly to 120°C to 150°C for bonding. (Col 4, lines 12-24) The adhesive tape is a heat activated adhesive, since application of the tape required the tape be heated to a temperature of 80°C to 120°C. Sakumoto et al is silent as to providing means for performing these steps. However, one of ordinary skill in the art reading Sakumoto et al would appreciate providing any combination of means to perform these steps. For example, providing a means to remove the coverlay is well known and conventional as shown by Saito et al. Saito et al discloses a method for applying an adhesive film to a semiconductor wafer. The method includes providing an

adhesive tape with a release liner, removing the release liner from the adhesive tape with a drive roller and a pinch roller prior to applying the tape. (Col 3, lines 10-28 and Col 5, lines 19-42)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove a release liner, i.e. coverlay film, by providing a means such as a drive and pinch rollers or wheels assembly to remove the coverlay film prior to applying the tape as disclosed by Saito et al in the method of Sakumoto et al to protect the adhesive on the tape and to allow easier removal of the tape from the reel. Sakumoto et al as modified by Saito et al is silent as to providing means to cut and applying the portion of the adhesive tape to the lead frame. However, providing a means to cut and apply the portion of the adhesive tape to the lead frame is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses an apparatus for applying a tape to lead-on-chip lead frame. The apparatus includes a length of adhesive tape on reels, drive mechanism for advancing the length of adhesive tape, an adhesive tape cutting assembly attachment, with a film cutting blade on the cutter block for cutting and attaching the tape by pressing the tape to the frame, and a support frame, i.e. wire lead frame, handler or feeder for guiding and feeding support frame to the location for applying the tape. (Col 3, lines 54-60, Col 4, lines 32-36, Col 4, line 61 to Col 5, line 8, Col 5, lines 59-63, Col 6, lines 7-14)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the adhesive tape on reel, drive mechanism for advancing the length of adhesive tape, a cutting assembly with a cutter block for cutting

and attaching the adhesive tape portion to the lead frame, and a wire lead frame handler or feeder for guiding and feeding the frame to the tape applying location as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by Saito et al to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15) Sakumoto et al as modified by the combination of references is silent as to the cutting blade is situated relative to the block. However, providing a cutting blade relative to the block is well known and conventional as shown for example by Tsukagoshi. Tsukagoshi discloses an apparatus for punching adhesive tape for thermocompression bonding to a lead or IC chip. The apparatus includes a punch and a die, both with cutting edges to punch out a portion of the adhesive tape for lead bonding. (See Machine Translation of JP 11-123471, Paragraph 13)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide cutting edges or blades on both the punch, i.e. block, and die as disclosed by Tsukagoshi in the method of Sakumoto et al as modified by the combination of references to provide a clean cut without burr. (See Tsukagoshi, Machine Translation of JP 11-123471, Paragraph 13)

Regarding claims 22 and 23, Sakumoto et al as modified above does recite the lead frame, which includes wire bond slots, but is silent as to the apparatus is configured to attach the adhesive film to cover 70% to 98% of the wire bond slot. However, configuring the apparatus to attach the adhesive film or tape to cover 70% to 98% of the wire bond slot is well known and conventional as shown for example by

VanNortwick et al. The apparatus as disclosed by VanNortwick et al discloses the tape feed rollers (46, 48) are drivably connected to stepping motors to drive the feed rollers a predetermined complete or partial revolutions and move the tape a corresponding linear amount or length into the tape cutter (Col 4, lines 25-36), which allow a user to modified the amount of tape to be applied to the support and to provide a cover for any support element covering any amount such about 70% to 98% of a wire bond slot on a support element. In any event, one of ordinary skill in the art would appreciate modifying the amount of tape to be feed into the tape cutter to logically use the only amount of tape required to cover the support element.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to logically provide modified the amount of tape feed into the tape cutter as disclosed in the apparatus of VanNortwick et al in the method of Sakumoto et al as modified by combination of references to allow a user to easily apply just the required amount of tape the support element.

Regarding claim 24, Sakumoto et al as modified above is silent as to apparatus includes a film guide. However, providing a film or tape guide is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses groove (92) for guiding tape onto the cutting block. (Col 6, lines 8-14)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an adhesive tape guide as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead

Art Unit: 1734

frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claims 27 and 28, Sakumoto et al as modified above is silent as to the driven assembly includes a first push wheel and a second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring. However, providing the driven assembly includes a first push wheel and a second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the feed rollers (46 and 48) are mounted opposite side of adhesive tape and is spring loaded to permit tensioning of the tape. (Col 4, lines 25-36)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the driven assembly includes a first push wheel and a second push wheel with the first push wheel is in engagement with first side of the adhesive tape and the second push wheel is in engagement with the second side of the adhesive tape and the push wheel is pressed into engagement with the adhesive tape by a spring as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape

into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claims 29-31, Sakumoto et al as modified above does not a wheel assembly to remove the coverlay film from the adhesive film. However, a coverlay film over the adhesive tape to protect the adhesive on the tape until use and a wheel assembly to remove the coverlay film from the adhesive film is well known and conventional as shown for example by Saito et al. Saito et al discloses a method for applying an adhesive film to a semiconductor wafer. The method includes providing an adhesive tape with a release liner, removing the release liner from the adhesive tape with a drive roller and a pinch roller, which provided friction force between the drive roller and the pinch roller prior to applying the tape. (Col 3, lines 10-28 and Col 5, lines 19-42)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide drive and pinch rollers or wheels assembly to remove the coverlay film prior to applying the tape as disclosed by Saito et al in the method of Sakumoto et al as modified by the combination of references to protect the adhesive on the tape and to allow easier removal of the tape from the reel.

Regarding claim 35, Sakumoto et al as modified above is silent as to a piston is operably coupled to the block to displace the block. However, providing a piston to operably coupled to the block to displace the block is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the cutter block is

Art Unit: 1734

driven up and down on guideposts by a hydraulic cylinder, which includes a piston. (Col 6, line 66 to Col 7, line 4)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a piston to operably coupled to the block as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of reference to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Regarding claim 36, Sakumoto et al as modified above is silent as to a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure. However, providing a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure is well known and conventional as shown for example by VanNortwick et al. VanNortwick et al discloses the cutter block includes vacuum passages to apply a vacuum force to the tape. (Col 6, lines 25-35)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a vacuum passage situated and configured to hold the desired portion of the adhesive tape on the block by vacuum pressure as disclosed by VanNortwick et al in the method of Sakumoto et al as modified by combination of references to provide an apparatus for cutting adhesive tape into decal and applying the cut decal to the lead frame at production speeds with no wasted tape. (See VanNortwick et al, Col 2, lines 12-15)

Art Unit: 1734

3. Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakumoto et al (U.S. 4,933,219) in view of Saito et al (U.S. 6,080,263), VanNortwick et al (U.S. 6,025,212), and Tsukagoshi (JP 11-123471) as applied to claim 30 above, and further in view of Wroblewski (U.S. 3,788,572).

Regarding claims 32 and 33, Sakumoto et al as modified above is silent as to the apparatus comprises of an idler assembly positioned downstream of the drive wheel assembly. However, providing an idler roll assembly positioned downstream of the drive wheel assembly to allow tension of the tape to be adjusted and providing an idler assembly positioned downstream of the drive wheel assembly is well known and conventional as shown for example by Wroblewski. Wroblewski discloses a strip take-up device. The device includes a strip tension sensing assembly where the idler assembly is positioned downstream of the drive wheel assembly, which retract and extend in responds to the tension in the strip to add or eliminate slack to the strip. (Col 7, line 56 to Col 8, line 64 and Figures 1A, 3, 4, and 6)

It would have been obvious to one skilled in the art at the time the invention was made to provide an idler assembly positioned downstream of the drive wheel assembly as disclosed by Wroblewski in the method of Sakumoto et al as modified by combination of references to allow the tension in the strip to be adjusted by adding or eliminating the slack in the strip to prevent the tape from breaking or fouling the mechanism without the need to use expensive limit switch. (See Wroblewski, Col 2, lines 10-13)

Regarding claim 34, Sakumoto et al as modified above is silent as to the idler assembly includes a spring biasing the idler roller in a downstream direction. However, using a spring to biasing the idler roller in a downstream direction is well known and conventional as shown for example by Wroblewski. Wroblewski discloses a spring is used to bias the idler roller in the downstream direction. (Figures 1A, 3, 4, and 6)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a spring to bias the idler roller as disclose by Wroblewski in the method of Sakumoto et al as modified by combination of references to allow the tension in the tape to be adjusted to prevent breakage or fouling of the mechanism without the need to use expensive limit switch. (See Wroblewski, Col 2, lines 10-13)

Response to Arguments

4. Applicant's arguments with respect to claims 21-36 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

Art Unit: 1734

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sing P. Chan whose telephone number is 571-272-1225. The examiner can normally be reached on Monday-Thursday 7:30AM-11:00AM and 12:00PM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher A. Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SPC


CHRIS FIORILLA
SUPERVISORY PATENT EXAMINER
Art 1734